



STATE OF NORTH BORNEO

---

ANNUAL REPORT

ON THE

MEDICAL DEPARTMENT

FOR THE YEAR 1937.

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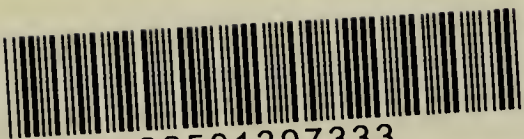
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# STATE OF NORTH BORNEO.

## ANNUAL REPORT ON THE MEDICAL DEPARTMENT FOR THE YEAR 1937.

### I.—VITAL STATISTICS.

1. *Population.*—The estimated population of North Borneo on the 31st December, 1936, was 290,526. The number of live births registered during the year was 7,874 and the number of deaths 7,558. The excess of immigration over emigration during the year amounted to 8,469. The estimated population of the State on 31st December, 1937, was therefore 299,311, an increase of 8,785 on the figure for 1936.

#### BIRTHS.

2. 8,022 births were registered during the year, compared with 8,184 during the previous year. The birth rate was 26.8 per mille compared with 28.2 per mille in 1936. Of the total births, 4,271 were males and 3,751 females, giving a birth sex ratio of males to females of 114:100.

##### Summary of Births according to Race and Sex.

		Male.	Female.	Total.
European	...	4	3	7
Natives of the State	...	3,011	2,718	5,729
Chinese	...	1,125	902	2,027
Malays and Javanese	...	67	75	142
Others	...	64	53	117
		<u>4,271</u>	<u>3,751</u>	<u>8,022</u>

#### DEATHS.

3. 7,558 deaths were registersd during the year, an increase of 1,276 or 20.3 per cent. on the total of 6,282 for 1936. This increase in the number of deaths was general almost throughout the State only the districts of Sipitang, Kotabelud, Langkon and Tambisan showed a lower death rate than in 1936. The death rate for the year was 25.2 per mille compared with 21.6 per mille for the previous year.

##### Table showing death rate per mille for the last five years :

Year.		Rate per mille.	Year.		Rate per mille.
1933	...	20.4	1936	...	21.6
1934	...	25.0	1937	...	25.3
1935	...	20.3			

##### Summary of Deaths according to Race and Sex.

		Male.	Female.	Total.
European	...	—	—	—
Natives of the State	...	3,419	2,779	6,198
Chinese	...	788	333	1,121
Malays and Javanese	...	149	47	196
Others	...	24	19	43
		<u>4,380</u>	<u>3,178</u>	<u>7,558</u>

The sex ratio for deaths was 138 : 100 females.

#### INFANT MORTALITY.

4. 1,286 deaths or 17.0 per cent. of the total motality occurred during the first year of life, compared with 1,431 deaths and 22.7 per cent. in 1936. The infantile mortality calculated on the number of live births recorded during the year was 163.3 per mille compared with 176.5 per mille in 1936 and 182.1 per mille in 1935.



## Summary of Infantile Mortality according to Races for the year 1937.

Race.	Live Births.	Infant Deaths.	Mortality per mille.
European ...	7	—	—
Natives of the State ...	5,639	943	167
Chinese ...	1,974	299	151
Malays and Javanese ...	140	30	214
Others ...	114	14	123
	<u>7,874</u>	<u>1,286</u>	<u>163</u>

The following table gives for comparison the Infant Mortality in the Federated Malay States for 1934.

Malays ...	181 per mille
Chinese ...	151 per mille
Others ...	81 per mille

5. The following table gives a summary of the principal causes of deaths of infants (under one year of age) in Sandakan during the year under review, the number of deaths given under 'Other causes' represents cases in which no qualified medical attention was sought by the parents:

	Deaths.
Malaria definitely diagnosed ...	2
Fever unspecified ...	30
Beri-beri ...	3
Bronchitis ...	5
Pneumonia (all forms) ...	24
Other diseases of the Respiratory system ...	27
Diarrhoea and Enteritis ...	17
Other diseases of the digestive system ...	8
Convulsions ...	4
Premature births ...	11
Abscesses ...	1
Pericarditis ...	1
Other causes ...	34
Total ...	<u>167</u>

6.

## Classification of Births in North Borneo, 1937.

District.	Total.	Europeans		Natives		Chinese		Malays		Others	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Bundu Tuhan ...	189	—	—	102	87	—	—	—	—	—	—
Ranau ...	291	—	—	148	138	3	2	—	—	—	—
Tambunan ...	519	—	—	275	241	1	1	—	1	—	—
Keningau ...	216	—	—	100	93	16	6	—	—	1	—
Sepulot ...	23	—	—	14	9	—	—	—	—	—	—
Pensiangan ...	150	—	—	79	68	—	3	—	—	—	—
Tenom ...	210	—	—	57	45	67	37	2	—	1	1
Sipitang ...	124	—	—	59	50	6	9	—	—	—	—
Membakut ...	314	—	—	143	154	10	4	1	1	1	—
Beaufort ...	449	1	—	151	165	56	50	10	12	3	1
Papar ...	734	—	—	215	198	150	127	14	15	6	9
Penampang ...	225	—	—	89	108	17	8	1	2	—	—
Jesselton ...	261	1	1	16	20	101	95	3	4	14	6
Mengattal ...	108	—	—	47	37	12	5	3	2	1	1
Tuaran ...	433	—	—	207	189	19	17	—	1	—	—
Kota Belud ...	630	—	—	330	275	14	9	—	2	—	—
Kudat ...	522	—	—	174	146	113	87	1	—	1	—
Langkon ...	223	—	—	120	101	1	1	—	—	—	—
Labuk and Sugut ...	458	—	—	232	209	7	5	—	2	1	2
Kinabatangan ...	260	—	—	148	107	1	1	—	2	1	—
Sandakan ...	817	2	2	51	55	366	294	7	10	16	14
Tambisan ...	43	—	—	24	18	1	—	—	—	—	—
Tungku ...	59	—	—	17	25	6	10	—	1	—	—
Lahad Datu ...	126	—	—	33	51	22	13	1	3	1	2
Semporna ...	182	—	—	101	69	6	2	1	—	—	3
Tawau ...	456	—	—	79	60	130	116	23	17	17	14
	<u>8,022</u>	<u>4</u>	<u>3</u>	<u>3,011</u>	<u>2,718</u>	<u>1,125</u>	<u>902</u>	<u>67</u>	<u>75</u>	<u>64</u>	<u>53</u>

## 7. Classification of Deaths in North Borneo, 1937.

District.	Total.	Europeans		Natives		Chinese		Malays		Others	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Bundu Tuhan ...	195	—	—	106	89	—	—	—	—	—	—
Ranau ...	438	—	—	255	180	3	—	—	—	—	—
Tambunan ...	708	—	—	425	283	—	—	—	—	—	—
Keningau ...	274	—	—	140	125	4	2	3	—	—	—
Sepulot ...	32	—	—	20	12	—	—	—	—	—	—
Pensiangan ...	118	—	—	72	45	—	1	—	—	—	—
Tenom ...	195	—	—	78	78	24	11	3	—	—	1
Sipitang ...	90	—	—	45	36	5	2	—	1	1	—
Mempakul ...	330	—	—	159	160	6	3	1	—	—	1
Beaufort ...	412	—	—	167	150	47	21	15	8	2	2
Papar ...	530	—	—	248	197	37	20	19	5	3	1
Penampang ...	198	—	—	117	76	3	—	1	1	—	—
Jesselton ...	226	—	—	40	19	101	43	13	4	1	5
Mengattal ...	135	—	—	67	60	3	3	2	—	—	—
Tuaran ...	419	—	—	232	177	7	2	1	—	—	—
Kota Belud ...	598	—	—	306	288	3	—	—	—	—	1
Kudat ...	468	—	—	206	174	49	37	2	—	—	—
Langkon ...	159	—	—	79	75	2	1	2	—	—	—
Labuk and Sugut ...	318	—	—	166	139	10	—	—	1	2	—
Kinabatangan ...	386	—	—	203	177	3	—	1	2	—	—
Sandakan ...	586	—	—	74	71	275	110	39	9	4	4
Tambisan ...	24	—	—	13	7	3	—	—	1	—	—
Tungku ...	53	—	—	26	21	4	2	—	—	—	—
Lahad Datu ...	158	—	—	38	44	40	15	11	6	3	1
Semporna ...	118	—	—	56	47	11	2	2	—	—	—
Tawau ...	390	—	—	81	49	148	58	34	9	8	3
	7,558	—	—	3,419	2,779	788	333	149	47	24	19

## 8. Classification of Deaths from all Causes at different Ages.

		AGE GROUP.								
District.		Under 1 year.	1—4 years.	5—9 years.	10—19 years.	20—29 years.	30—39 years.	40—49 years.	50 years and over.	Total.
Tawau	...	101	25	5	18	44	69	57	71	390
Semporna	...	29	3	4	7	22	20	11	22	118
Lahad Datu	...	51	10	4	5	11	18	19	40	158
Tungku	...	14	9	5	1	—	5	8	11	53
Tambisan	...	9	3	—	—	3	3	4	2	24
Kinabatangan	...	64	60	13	35	30	37	70	77	386
Sandakan	...	167	42	14	18	48	74	74	149	586
Labuk and Sugut		80	43	18	14	25	26	38	74	318
Langkon	...	46	11	5	8	13	19	21	36	159
Kudat	...	98	55	21	28	32	60	68	106	468
Kota Belud	...	74	54	44	66	57	76	71	156	598
Tuaran	...	28	46	18	23	42	97	54	111	419
Mengattal	...	10	19	12	9	20	16	20	29	135
Jesselton	...	41	16	6	7	30	30	33	63	226
Penampang	...	13	29	9	18	21	32	32	44	198
Papar	...	103	59	21	37	33	78	64	135	530
Beaufort	...	107	48	30	19	32	53	38	85	412
Mempakul	...	85	46	19	27	18	31	39	65	330
Sipitang	...	7	10	7	7	9	9	9	32	90
Tenom	...	28	18	7	8	11	33	38	52	195
Pensiangan	...	12	4	3	3	11	22	23	40	118
Sepulot	...	1	1	2	2	4	10	7	5	32
Keningau	...	34	13	9	20	27	61	37	73	274
Tambunan	...	29	67	22	54	90	142	97	207	708
Ranau	...	44	34	21	35	47	78	72	107	438
Bundu Tuhan	...	11	13	7	21	17	24	39	63	195
		1,286	738	326	490	697	1,123	1,043	1,855	7,558

## REGISTRATION.

9. Registration of births and deaths is compulsory throughout the whole Territory, at the same time these statistics should be accepted with reserve. Owing to the fact that a large part of the Native population of the Interior and West Coast lives in remote villages, the registration of births and deaths is necessarily incomplete.



## II.—METEOROLOGICAL OF NORTH BORNEO.

10. The equipment at Sandakan includes the following instruments:

Mercury barometer

Stevenson screen with wet and dry bulb Hygrometer and Maximum and Minimum thermometers.

Five-inch rain-gauge, "Snowdon" Pattern.

Dines pressure tube anemometer recording speed.

The equipment at auxiliary stations at Tawau, Semporna, Kudat, Jesselton, Beaufort, Tenom, Keningau and Tambunan consists of wet and dry bulb Hygrometer, and maximum and minimum thermometers together with a standard rain-gauge of five inches diameter.

In addition standard rain-gauges of five inches diameter are also provided at eighteen other stations.

### TEMPERATURE.

11. The mean temperature for the year was 81.0° Fahrenheit and the mean daily range was 16.2 degrees. The recorded extremes were 97° at Beaufort, in the West Coast Residency, and minimum 59° at Tambunan (1,800 feet above sea level) also in the West Coast Residency.

### RAINFALL.

12. The mean rainfall for the year, of observations recorded at twenty-seven stations, was 111.2 inches, compared with 100.1 inches in 1936.

Mean Rainfall during the last six years.

Year.	Rainfall in inches.	Year.	Rainfall in inches.
1937	... 111.2	1934	... 128.4
1936	... 100.1	1933	... 106.9
1935	... 102.1	1932	... 123.6

13. The mean rainfall during the year in each Residency was as follows:—

	Rainfall in inches.	Difference from normal.
West Coast Residency (18 stations)	... 117.2	+ 10.0 inches
East Coast Residency (9 stations)	... 99.2	+ 2.2 inches.

### TELEGRAPHIC REPORTS OF WEATHER INFORMATION.

14. Observations of barometric pressure, temperature, humidity, wind direction and force, visibility, weather and state of the sea were recorded daily at Sandakan at 6 a.m., 9 a.m., 2 p.m. and 8 p.m. and returns incorporating these observations were forwarded at the end of each month to the Director of the Meteorological Office of the Air Ministry in London. Observations taken at 6 a.m. and 2 p.m. were forwarded daily by wireless telegraphy to the Royal Observatory, Hong Kong, and the Superintendent, Malayan Meteorological Service, Singapore.

15. Summary of Meteorological Observations taken at fixed hours at Sandakan.

LATITUDE 5° 50' N. LONGITUDE 118° 07' E.

Hours of observation. { 06th. 00m.  
                          { 09th. 00m.  
                          { 14th. 00m.  
                          { 20th. 00m.

Month.	PRESSURE. Mean of Day at M. S. L. mb.	TEMPERATURE.							PRECIPITATION				
		ABSOLUTE.		MEAN VALUE.			Diff. from Normal ° F	MEAN. Wet Bulb. ° F	Relative Humidity %	Mean Cloud Amount 0-10.	Amount inches.	Difference from normal inches.	Days.
		Max. ° F	Min. ° F	Max. ° F	Min. ° F	$\frac{1}{2}$ Max. & Min. ° F							
January	1008.9	90	72	85.8	74.8	80.3	+ 0.5	76.8	88	8.9	19.58	+ 0.18	22
February	1011.1	88	73	86.9	75.4	81.1	+ 0.9	77.1	85	7.8	4.58	—5.39	13
March	1008.8	90	74	88.5	76.1	82.3	+ 1.3	77.5	80	6.7	0.65	—7.82	8
April	1008.5	91	74	88.5	76.6	82.5	+ 0.3	78.2	84	7.9	4.01	—0.48	18
May	1009.4	92	74	89.2	76.2	82.7	+ 0.2	77.8	84	7.0	10.90	+ 4.57	14
June	1008.7	92	72	89.7	75.9	82.8	+ 1.1	77.5	84	6.8	7.17	—0.33	13
July	1008.1	91	72	89.1	74.9	82.0	+ 0.2	76.9	84	7.7	10.84	+ 4.12	15
August	1008.3	92	73	89.4	75.2	82.3	+ 0.5	76.8	83	7.9	6.13	—1.76	12
September	1009.8	92	73	88.7	75.3	82.0	+ 0.3	77.1	83	7.2	7.60	—1.73	17
October	1009.3	91	72	88.5	74.9	81.7	+ 0.3	77.4	83	8.6	11.55	+ 1.22	18
November	1008.4	90	73	87.2	75.3	81.3	+ 0.4	77.9	84	7.7	16.23	+ 1.51	19
December	1008.6	89	71	85.2	74.9	80.1	—0.1	76.8	87	8.9	22.90	+ 4.26	22
For Year	1009.0	92	71	88.1	75.5	81.8	+ 0.5	77.3	84	7.8	122.14	—2.65	191

## III—GOVERNMENT MEDICAL INSTITUTIONS.

16. On 1st January, 1937, there remained 345 patients under treatment in eighteen Government Medical Institutions. During the year 5,550 patients were admitted giving a total under treatment of 5,895 compared with 4,250 in 1936 and 4,922 in 1935. Of the 5,550 patients treated 4,888 were discharged cured, 204 were transferred, 39 absconded, 344 died, and 420 patients remained under treatment on 31st December, 1937.

The mean death rate for all hospitals was 5.8 per cent. compared with 5.7 per cent. in 1936.

## EUROPEAN AND 2ND CLASS WARDS.

17. SANDAKAN CIVIL HOSPITAL.—During the year twenty-seven patients were admitted to the European Wards with no deaths compared with twelve patients and no deaths in 1936.

120 patients were admitted to the second class wards with 5 deaths compared with 123 admissions and 3 deaths in 1936.

18. JESSELTON CIVIL HOSPITAL.—22 patients were treated in the European Wards with no deaths, compared with 19 patients and no deaths in 1936.

In the second class wards, there were 109 admissions with 3 deaths, compared with 110 admissions and 6 deaths during 1936.

19. The following summary shows the number of in-patients treated in each hospital during the year, 1937:—

Inpatients treated in Government Medical Institutions during the year, 1937.

Institution.	Remained 1. 1. 37.	Ad- mitted.	Total.	Dis- charged.	Trans- ferred.	Ab- sconded.	Died.	Remained 31. 12. 37.	Death rate per cent.
Sandakan Civil Hospital ✓	41	1,472✓	1,513✓	1,278	65	—	114✓	56	7.5
Sandakan Gaol Hospital	10	141✓	151✓	131	13	—	1✓	6	0.7
Jesselton Civil Hospital ✓	36	885✓	921✓	785	7	20	76✓	33	8.3
Jesselton Constabulary Hospital	1	277✓	278✓	242	27	—	1✓	8	0.4
Jesselton Gaol Hospital	3	175✓	178✓	130	29	—	8✓	11	4.5
Beaufort Civil Hospital ✓	20	350✓	370✓	285	25	3	32✓	25	8.6
Kudat Civil Hospital ✓	19	718✓	737✓	679	13	2	23✓	20	3.1
Tawau Civil Hospital ✓	9	394✓	403✓	351	4	—	28✓	20	6.9
Semporna Sick Rest House	1	2	3✓	2	1	—	—	—	—
Kota Belud Sick Rest House	4	92	96✓	77	2	8	5	4	5.2
Sipitang Sick Rest House	—	97	97✓	74	9	—	—	14	—
Tenom Sick Rest House	9	151	160✓	137	6	—	9	8	5.6
Pensiangan Sick Rest House	1	138	139✓	132	—	—	2✓	5	1.4
Keningau Sick Rest House	4	319	323✓	292	3	—	12✓	16	3.7
Tambunan Sick Rest House	13	276	289✓	264	—	2	11	12	3.8
Ranau Sick Rest House	3	24	27✓	22	—	—	1	4	3.7
Mental Hospital, Sandakan	102	30✓	132✓	7	—	—	16✓	109	12.1
Leper Colony, Sandakan	69	9	78	—	—	4	5	69	6.4
Total	345	5,550	5,895	4,888	204	39	344	420	5.8

## IV.—GOVERNMENT OUTPATIENT DEPARTMENTS AND DISPENSARIES.

20. Summary of Out-patients treated during 1937.

	New cases.	Repetitions.	Total.
SANDAKAN :			
Civil Hospital	5,891✓	16,454✓	22,345✓
Constabulary	657✓	686	1,343
Venereal Clinic	190✓	1,186	1,376
Gaol Hospital	1,256✓	2,320	3,576
JESSELTON :			
Civil Hospital	7,013✓	3,195✓	10,208✓
Constabulary Hospital	2,338✓	5,513	7,851
Gaol Hospital	874✓	6,392	7,266
Beaufort Civil Hospital	5,905✓	1,865✓	7,770✓
KUDAT :			
Civil Hospital	5,005✓	2,307	7,312✓
Gaol Hospital	785✓	2,175	2,960
Tawau Civil Hospital	6,586✓	5,563	12,149✓



## GOVERNMENT DISPENSARIES :

	New cases.	Repetitions.	Total.
Semporna ...	5,019	5,917	10,936
Kota Belud ...	15,013	6,874	21,887
Tuaran ...	6,234	925	7,159
Papar ...	11,163	10,027	21,190
Mempakul ...	5,952	751	6,703
Sipitang ...	4,733	1,604	6,337
Tenom ...	4,946	3,419	8,365
Pensiangan ...	8,141	13,431	21,572
Keningau ...	15,191	20,613	35,804
Tambunan ...	13,773	8,430	22,203
Ranau ...	9,048	10,338	19,386
Bundu Tuhan ...	10,588	1,229	11,817

## TRAVELLING DISPENSARIES :

Kudat and Marudu Bay ...	1,649	802	2,451
Labuk and Sugut ...	501	2	503
Kinabatangan ...	1,675	112	1,787
<b>Total</b>	<b>150,126</b>	<b>132,130</b>	<b>282,256</b>

21. The total number of outpatients treated during the year amounted to 282,256 compared with 218,423 in 1936, an increase of 63,833 patients or 29.2 per cent. The number of outpatients treated at all Out-station Dispensaries, without exception shows a substantial increase during the year under review.

## Summary of Out-patients treated during the past five years :

Year.	Number of patients treated.
1937 ...	282,256
1936 ...	218,423
1935 ...	198,398
1934 ...	174,899
1933 ...	156,707

22. The figures under Beaufort Civil Hospital in the above summary include patients treated at quarterly clinics held by the District Surgeon at Gadong, Weston, Bukau and Limbawang. Under Tawau the number of patients treated include those attending the weekly clinics at the Chinese settlements at Apas and Sin On. At Tuaran the figures include patients treated at the weekly clinics at Mengattal, Penampang, Putatan and Kinarut and patients treated at the weekly clinics at Kabang, Kimanis, Bangawan and Membakut are included in the figures under Papar.

23. During the year the District Surgeon, Beaufort and Interior, Dr. J. C. T. Tregarthen, made five extended tours through the Interior and Beaufort District, during February and March, he visited the Government Dispensaries at Keningau, Tambunan, Ranau and Bundu Tuhan, at which large numbers of patients were examined and treated ; in addition, clinics were held at Bingkor, Apin Apin, Purutan, Dangulad, Sensuran, Mangi Pangi, Beban, Kerokot, Pahu Pahu, Libang, Mensangoh, Rendagong, Kenipir, Kundasan, Tagudon and Teboh. In all 8,626 natives attended the various clinics and received treatments.

In May and June, Dr. Tregarthen, visited the Government Dispensary at Pensiangan, the outward journey was made by the bridle path via Sepulot and the return journey by native tracks through the Dalit country. Treatment centres were arranged at Tetagup, Sook, Nabawang, Pohan Batu, Rumidi, Lyon, Malaing, Dalit, Kalampun, Punt, Biak, Pandiwan, Matiku, Sepulot, Agis, Segattal, Pensiangan, Silu, Sibungoh, Samputian and Sibulu, 2,751 natives were examined and treated at the various clinics.

In September and October, Dr. Tregarthen arranged treatment centres at Pahl, Kamabong, Tomani, Tinora, Nandogot, S. Orum and Semambu. In all 822 natives attended the various clinics and received treatments.

In November Dr. Tregarthen toured the Bokan country between Keningau and the headwaters of the Kinabatangan River, 1010 patients were examined and treated at twelve centres, Tetegap, Mapila, Bunang, Karamatoi, Tiong, Pau, Tulid, Lanas, Linsok, Kuit, S. Atug and Kundasan.

In December Dr. Tregarthen during his visit to Beaufort held clinics at Limbawang, Gadong, Melaman, Sipitang, Weston, Menombok and Snkau. In all 1,417 natives attended the various clinics and received treatments.



## V.—PREVAILING DISEASES.

## MALARIA.

24. The following table shows the number of Malaria admissions to and deaths in Government Hospitals during the year 1937:—

		Admissions.	Deaths.
SANDAKAN—			
Civil Hospital	...	495	14
Gaol Hospital	...	2	—
JESSELTON—			
Civil Hospital	...	181	6
Constabulary Hospital	...	26	—
Gaol Hospital	...	9	1
Beaufort Civil Hospital	...	29	1
Kudat Civil Hospital	...	130	1
Tawau Civil Hospital	...	139	4
Semporna Sick Rest House	...	—	—
Kota Belud Sick Rest House	...	12	—
Sipitang Sick Rest House	...	—	—
Tenom Sick Rest House	...	19	—
Pensiangan Sick Rest House	...	6	—
Keningau Sick Rest House	...	20	—
Tambunan Sick Rest House	...	51	3
Ranau Sick Rest House	...	6	—
		1,125	30

25. *Blackwater fever*.—Jesselton and Tawau Civil Hospitals reported 4 cases and 2 cases of Blackwater fever respectively with recovery in all cases. Sandakan Civil Hospital reported 1 case and 1 death, Kudat Civil Hospital reported six cases and two deaths from Blackwater fever and no cases were reported from Beaufort Civil Hospital.

26. *Prevailing type of malaria*.—The following table shows the relative frequency of the three species of malaria parasites seen in positive blood films at Government Hospitals and Dispensaries:

Hospital.		Number of films examined.	positive.	Subtertian parasites found in per cent.	Benign Tertian parasites found in per cent.	Quartan parasites found in per cent.	Mixed Infection. per cent.
Tawau	...	350	99	9.1	70.7	8.1	12.1
Sandakan	...	1,164	330	26.4	63.9	5.2	4.5
Kudat	...	221	112	58.9	25.0	5.4	10.7
Jesselton	...	647	62	8.1	79.0	8.1	4.8
Beaufort	...	173	25	28.0	40.0	24.0	8.0
Tenom	...	263	81	22.2	53.1	23.5	1.2
Pensiangan	...	21	3	—	100.0	—	—
Keningau	...	246	63	7.9	57.1	28.6	6.4
Tambunan	...	335	61	41.0	34.4	18.0	6.6
		3,420	836	28.6	56.3	10.8	6.3

27. The District Surgeon, Beaufort and Interior, Dr. J. C. T. Tregarthen, examined 8,626 natives at various centres between Keningau and Bundu Tuhan and found the spleen to be enlarged in 8,051 or 93.3 per cent. In 1936 during a similar tour an enlarged spleen was found in 97.4 per cent of 6,039 examined. The average projection below the costal margin, in centimeters was as follows:—

Infants	...	3.8 centimeters		Adult males	...	5.6 centimeters
Children under 16	...	4.7 centimeters		Adult females	...	5.8 centimeters

28. In May and June 1937, Dr. Tregarthen visited the Government Dispensary at Pensiangan, he examined 2,751 Muruts en route and found the spleen enlarged in 2,673 or 97.2 per cent compared with 98.6 per cent in 2,312 Muruts examined in 1936.

In 1,863 cases the projection of the spleen below the costal margin was measured and the following average projection was found:—

Infants	...	3.5 centimeters		Adult males	...	5.6 centimeters
Children under 16	...	5.0 centimeters		Adult females	...	6.2 centimeters

29. In September and October, 1937, Dr. Tregarthen visited the Tenom district; he examined 822 natives and found the spleen enlarged in 710 or 86.4 per cent.

In 407 cases the projection of the spleen below the costal margin was measured and the following average projection was found:—

Infants ...	4.0 centimeters	Adult males ...	5.9 centimeters
Children under 16 ...	5.3 centimeters	Adult females ...	5.7 centimeters

30. In November Dr. Tregarthen, during his tour of the Bokaan country, examined 1,010 Muruts and found the spleen to be enlarged in 933 or 92.4 per cent.

In 933 cases the projection of the spleen below the costal margin was measured and the following average projection was found:—

Infants ...	4.2 centimeters	Adult males ...	6.1 centimeters
Children under 16 ...	5.0 centimeters	Adult females ...	6.2 centimeters

31. In December Dr. Tregarthen visited the Beaufort District, he examined 1,417 natives and found the spleen to be enlarged in 1,299 or 91.7 per cent.

In 529 cases the projection of the spleen below the costal margin was measured and the following average projection was found:—

Infants ...	3.6 centimeters	Adult males ...	5.3 centimeters
Children under 16 ...	4.8 centimeters	Adult females ...	6.6 centimeters

32. In August arrangements were made for efficient mosquito nets to be available for sale at all Government Hospitals and Dispensaries at cost price. By this means 38 nets were issued to the public.

#### BERI-BERI.

33. The following table shows the number of cases of Beri-beri admitted to Government Hospitals during the year 1937 with the number of deaths:—

	Admissions.	Deaths.
<b>SANDAKAN—</b>		
Civil Hospital ...	62✓	4
Gaol Hospital ...	2✓	—
<b>JESSELTON—</b>		
Civil Hospital ...	8✓	1
Constabulary Hospital ...	5✓	—
Gaol Hospital ...	1✓	—
Beaufort Civil Hospital ...	27✓	2
Kudat Civil Hospital ...	3	2
Tawau Civil Hospital ...	71✓	6
Tenom Sick Rest House ...	6✓	1
	<u>185</u>	<u>16</u>

34. Summary of cases of Beri-beri treated in Government Hospitals during the past five years:—

Year.	Admissions.	Deaths.
1937 ...	185	16
1936 ...	164	12
1935 ...	131	12
1934 ...	185	20
1933 ...	58	1

35. 6,384 cases of Yaws were treated during the year 1937 as follows:—

	New cases.	Repetitions.	Total.
<b>WEST COAST RESIDENCY</b>			
Bundu Tuhan ...	134	2	136
Ranau ...	119	7	126
Tambunan ...	185	—	185
Keningau ...	273	19	292
Pensiangan ...	304	—	304
Tenom ...	51	4	55
Sipitang ...	74	—	74
Mempakul ...	176	18	194
Beaufort ...	9	—	9
Membakut ...	88	—	88
Bangawan ...	57	—	57
Kimanis ...	21	—	21
Kabang ...	208	—	208
Papar ...	1,108	—	1,108
Kinarut ...	209	1	210
Kawang ...	24	—	24



		New cases	Repetitions	Total.
Putatan	...	85	—	85
Penampang	...	116	—	116
Jesselton	...	17	—	17
Mengattal	...	26	—	26
Tuaran	...	450	6	456
Kota Belud	...	313	56	369
EAST COAST RESIDENCY				
Kudat	...	266	—	266
Marudu Bay	...	747	—	747
Labuk and Sugut	...	159	—	159
Sandakan	...	5	4	9
Kinabatangan	...	449	9	458
Semporna	...	368	139	507
Tawau	...	42	36	78
Total	...	6,083	301	6,384

36. The following summary shows the number of cases of yaws treated during the past five years:—

Year.		West Coast Residency.	East Coast Residency.	Total.
1937	...	4,160	2,224	6,384
1936	...	4,803	2,359	7,162
1935	...	6,052	1,573	7,625
1934	...	5,862	2,013	7,875
1933	...	6,288	2,397	8,685

#### DYSENTERY.

37. 466 cases of dysentery were admitted to Government hospitals during 1937 with 22 deaths, compared with 227 cases and 15 deaths in 1936.

		Admissions.	Deaths.
SANDAKAN —			
Civil Hospital	...	66	6
Gaol Hospital	...	32 <sup>98</sup>	—
JESSELTON —			
Civil Hospital	...	59	4
Constabulary Hospital	...	5	—
Gaol Hospital	...	32 <sup>96</sup>	—
Beaufort Civil Hospital	...	21	2
Kudat Civil Hospital	...	46	—
Tawau Civil Hospital	...	16	—
Tenom Sick Rest House	...	30	—
Pensiangan Sick Rest House	...	9	—
Keningau Sick Rest House	...	97	9
Tambunan Sick Rest House	...	34	1
Ranau Sick Rest House	...	7	—
Sipitang Sick Rest House	...	6	—
Kota Belud Sick Rest House	...	6	—
		466	22

38. An outbreak of amoebic dysentery occurred in a number of villages in the Kotabelud district in June and an additional dresser was sent from Jesselton to assist the dresser stationed at Kotabelud. 171 cases were reported to have been treated, there were 34 deaths. Minor outbreaks also occurred in the Tuaran district and the Ulu Sugut.

#### PNEUMONIA.

39. 170 cases of lobar pneumonia were admitted to Government hospitals during 1937 with 84 deaths, compared with 77 cases and 30 deaths in 1936.

		Admissions.	Deaths.
SANDAKAN —			
Civil Hospital	...	46	27
Gaol Hospital	...	—	—
JESSELTON —			
Civil Hospital	...	50	23
Constabulary Hospital	...	2	1
Gaol Hospital	...	6	3
Beaufort Civil Hospital	...	14	5

	Admissions.	Deaths.
Kudat Civil Hospital ...	16	8
Tawau Civil Hospital ...	6	5
Tenom Sick Rest House ...	4	3
Pensiangan Sick Rest House ...	—	—
Keningau Sick Rest House ...	5	3
Tambunan Sick Rest House ...	16	4
Ranau Sick Rest House ...	1	1
Sipitang Sick Rest House ...	2	—
Kota Belud Sick Rest House ...	2	1
	<hr/> 170	<hr/> 84

## PULMONARY TUBERCULOSIS.

40. 95 cases of pulmonary tuberculosis were admitted to Government hospitals with 23 deaths compared with 82 cases and 26 deaths in 1936.

## ANKYLOSTOMIASIS.

41. The control of ankylostomiasis initiated in 1921 by the Rockefeller Institute, under the supervision of Dr. Clark H. Yeager, was continued during the year 1937. In Sandakan and Jesselton this work is carried out by a special staff and all Government servants, schoolchildren, and labourers employed on small estates in the vicinity of these towns are examined twice yearly for hookworm infection and treated if necessary. In Sandakan and Jesselton 6,998 persons were examined of whom 451 were found to be infected with hookworm disease, the infection rate was 6.4 per cent. In all 10,551 treatments were administered, this figure includes mass treatment, without previous examination, to the inhabitants of Inanam, Mengattal, Telipok, Tuaran, Penampang, Jesselton, Tanjong Aru, Sembulan, Putatan, Kinarut and Kawang.

42. The following summary shows the infection rate during the past fourteen years:—

Year.	Infection rate per cent.	Year.	Infection rate per cent.
1937 ...	6.4	1930 ...	4.7
1936 ...	5.7	1929 ...	5.4
1935 ...	4.2	1928 ...	10.
1934 ...	5.4	1927 ...	17.
1933 ...	4.9	1926 ...	18.
1932 ...	5.3	1925 ...	39.
1931 ...	4.5	1924 ...	71.

43. In other districts treatments were given by the staff of Government Hospitals and Dispensaries; during the course of Dr. Tregarthen's five tours through the Interior and Beaufort districts, mass treatment was administered to 11,076 natives.

## VI.—SURGICAL OPERATIONS.

44. The number of surgical operations performed in Government Hospitals during the year, 1937, amounted to 463, compared with 357 in 1936. The following summary shows the number of operations performed at each hospital:—

	Major.	Minor.	Total.
Sandakan Civil Hospital ...	4	71	75
Jesselton Civil Hospital ...	5	96	101
Beaufort Civil Hospital ...	6	78	84
Kudat Civil Hospital ...	1	58	59
Tawau Civil Hospital ...	—	8	8
Tenom Dispensary ...	2	33	35
Pensiangan Dispensary ...	—	12	12
Keningau Dispensary ...	—	69	69
Tambunan Dispensary ...	—	10	10
Ranau Dispensary ...	—	—	—
Bundu Tuhan Dispensary ...	—	4	4
Sipitang Dispensary ...	—	1	1
Mempakul Dispensary ...	—	5	5
	<hr/> 18	<hr/> 445	<hr/> 463

In addition to the above 3,612 dental extractions were performed at the various treatment centres in the Interior during the year 1937.



## VII.—POSTMORTEM EXAMINATIONS.

45. 59 post-mortem examinations were performed during the year in Government hospitals compared with 52 in 1936. The following summary shows the number performed at each hospital :—

Sandakan Civil Hospital	...	22
Jesselton Civil Hospital	...	19
Beaufort Civil Hospital	...	10
Kudat Civil Hospital	...	4
Tawau Civil Hospital	...	1
Keningau Dispensary	...	1
Ranau Dispensary	...	1
Pensiangan Dispensary	...	1
Total	...	59

## VIII.—LABORATORY EXAMINATIONS.

## 46. EXAMINATION OF BLOOD FILMS FOR MALARIAL PARASITES.

		SPECIES OF PARASITE FOUND.					No. of films found negative
	No. of films examined	Larverania Malariae	Plas- modium vivax	Plas- modium malariae	Mixed infec- tion		
Sandakan Civil Hospital	...	1,164	87	211	17	15	834
Jesselton Civil Hospital	...	647	5	49	5	3	585
Beaufort Civil Hospital	...	173	7	10	6	2	148
Kudat Civil Hospital	...	221	66	28	6	12	109
Tawau Civil Hospital ✓	...	350	9	70	8	12	251
Tenom Dispensary	...	263	18	43	19	1	182
Pensiangan Dispensary	...	21	—	3	—	—	18
Keningau Dispensary	...	246	5	36	18	4	183
Tambunan Dispensary	...	335	25	21	11	4	274
		<hr/> 3,420	<hr/> 222	<hr/> 471	<hr/> 90	<hr/> 53	<hr/> 2,584
			% 26.7	56.7	10.8	6.4.	

## 47. PREVAILING TYPE IN FILMS FOUND POSITIVE.

Plasmodium vivax	...	56.3 per cent.
Laverania malariae	...	26.6 „ „
Plasmodium malariae	...	10.8 „ „
Mixed infection	...	6.3 „ „

48. EXAMINATION OF FÆCES FOR INTESTINAL PARASITES.

The following table shows the various intestinal parasites seen in the films examined:—

	Sandakan Civil Hospital	Jesselton Civil Hospital	Beaufort Civil Hospital	Kudat Civil Hospital	Tawau Civil Hospital	Tenom Dispensary	Pensiangan Dispensary	Keningau Dispensary	Tambunan Dispensary	Kota Belud Dispensary	Total.
...	50	122	53	62	16	16	1	67	9	—	396
Ankylostoma duodenale	...	...	...	...	...	...	...	...	...	...	11
Ankylostoma duodenale and Strongyloides stercoralis	1	1	6	—	—	—	—	—	3	—	11
Ankylostoma duodenale and Ascaris lumbricoides	15	35	96	21	19	5	64	14	2	2	273
Ankylostoma duodenale and Tricocephalus dispar	8	17	40	2	5	3	—	2	2	—	79
Ankylostoma duodenale and Clonorchis sinensis	—	—	1	—	—	—	—	—	—	—	1
Ankylostoma duodenale and Entamoeba histolytica	1	3	—	—	1	—	—	7	—	—	12
Ankylostoma duodenale, Strongyloides stercoralis and Ascaris lumbricoides	1	2	3	—	—	—	—	1	—	—	7
Ankylostoma duodenale, Ascaris lumbricoides and Tricocephalus dispar	1	5	14	2	3	—	—	1	—	—	26
Ankylostoma duodenale, Ascaris lumbricoides and Entamoeba histolytica	—	1	—	—	—	—	—	—	—	—	1
Ankylostoma duodenale, Tricocephalus dispar and clonorchis sinensis	1	—	—	—	—	—	—	—	—	—	1
Ankylostoma duodenale, Strongyloides stercoralis, Ascaris lumbricoides and Tricocephalus dispar	—	—	—	—	—	—	—	1	—	—	1
Strongyloides stercoralis	33	8	3	4	5	2	—	—	—	—	55
Strongyloides stercoralis and Ascaris lumbricoides	4	1	8	—	1	—	—	—	12	—	26
Strongyloides stercoralis and Tricocephalus dispar	3	2	1	—	2	—	—	—	—	—	8
Strongyloides stercoralis and Entamoeba histolytica	—	—	—	—	—	—	—	1	—	—	1
Strongyloides stercoralis, Ascaris lumbricoides and Tricocephalus dispar	—	—	1	—	—	—	—	—	—	—	1
Ascaris lumbricoides	170	261	65	137	24	27	—	32	146	31	893
Ascaris lumbricoides and Tricocephalus dispar	9	51	49	3	14	4	—	—	49	2	131
Ascaris lumbricoides and Oxyuris vermicularis	—	1	—	—	—	—	—	—	—	—	1
Ascaris lumbricoides and Entamoeba histolytica	—	1	1	—	—	—	—	3	2	—	7
Ascaris lumbricoides, Tricocephalus dispar and Entamoeba histolytica	82	52	5	13	6	4	4	2	1	2	171
Tricocephalus dispar	2	1	—	—	—	—	4	—	—	—	3
Tricocephalus dispar and Entamoeba histolytica	4	—	1	—	—	—	—	1	—	—	6
Clonorchis sinensis	2	—	—	—	—	—	—	—	—	—	3
Oxyuris vermicularis	131	155	27	28	20	31	12	107	32	13	556
Entamoeba histolytica	1,147	663	183	161	297	52	138	54	104	73	2,872
Negative films	...	...	...	...	...	...	...	...	...	...	...
TOTAL	1,665	1,384	557	433	413	144	219	293	362	123	5,593

80 / 14.6

15.1

13.4

22.8

7.0

6.3

20.4



49. Of the 5,593 specimens of faeces examined, 1 specimen contained four different varieties of parasites, 37 specimens contained three varieties, 603 specimens contained two varieties, 2,080 specimens contained a single variety and 2,872 were found to be negative.

50. The following summary shows the infection rate of the three most prevalent intestinal parasites :—

Institution	Ankylostoma duodenale per cent.	Ascaris lumbricoides per cent.	Tricocephalus dispar per cent.
Sandakan Civil Hospital	4.7	12.0	6.3
Jesselton Civil Hospital	13.4	25.9	9.3
Beaufort Civil Hospital	38.2	42.5	19.8
Kudat Civil Hospital	20.1	37.6	4.6
Tawau Civil Hospital	10.7	14.8	7.3
Tenom Dispensary	16.7	25.0	7.6
Pensiangan Dispensary	29.7	29.2	1.8
Keningau Dispensary	31.7	17.7	2.0
Tambunan Dispensary	4.4	58.3	14.4
Kota Belud Dispensary	1.6	28.5	3.3

51.

## MISCELLANEOUS EXAMINATIONS.

	Sandakan Civil Hospital	Jesselton Civil Hospital	Beaufort Civil Hospital	Kudat Civil Hospital	Tawau Civil Hospital	Tenom Dispensary	Pensiangan Dispensary	Keningau Dispensary	Tambunan Dispensary
<b>GONORRHOEA.—</b>									
Urethral smears									
Positive	...	15	42	16	6	4	9	9	15
Negative	...	2	5	14	1	5	7	1	—
Vaginal smears									
Positive	...	54	—	—	—	—	7	4	—
Negative	...	101	—	—	—	1	—	—	—
<b>LEPROSY.—</b>									
Nasal smears									
Positive	...	—	3	—	1	—	—	—	—
Negative	...	1	7	2	2	6	—	—	—
Smears from nodules									
Positive	...	20	—	—	—	—	—	—	—
Negative	...	12	—	—	4	—	—	—	—
<b>TUBERCULOSIS.—(SPUTUM)</b>									
Positive	...	37	19	10	8	22	6	—	1
Negative	...	109	252	54	19	51	12	—	13
<b>DIPHTHERIA.—(THROAT SWABS)</b>									
Positive	...	1	2	—	—	—	—	—	—
Negative	...	2	2	—	—	—	—	—	—

MISCELLANEOUS EXAMINATIONS CARRIED OUT IN THE  
OFFICE OF THE PRINCIPAL MEDICAL OFFICER.

52. During the year 24 samples of distilled liquor were examined. In 17 samples the weight of alcohol per cent. was found to vary from 18.36 per cent. to 41.15 per cent.; in the remaining exhibits the weight of alcohol was less than 2 per cent.

53. Two samples of rice beer were examined, the alcohol content being 2.73 per cent. and 2.17 per cent. by weight respectively.

54. In May a red pill was received for examination from the Customs Department and was found to contain Diamorphine or Heroin. Subsequently on information received the Police raided a house in Sandakan town on the 8th May and five tins containing 2,152 Heroin pills were seized.

55. The debris from the bowl of a pipe which was said to have been used for smoking heroin was examined for the presence of heroin with a negative result.

## IX.—SANDAKAN MENTAL HOSPITAL.

56. The number of patients remaining under treatments at the end of the year, 1937, was 109, an increase of 7 patients compared with the previous year.

	Males	Females	Total
Remained on 1st January, 1937	81	21	102
Admitted during 1937	21	9	30
Discharged during the year	5	2	7
Died	12	4	16
Remaining on 31st December, 1937	85	24	109
Percentage of recoveries	...	23.3 per cent.	
„ „ deaths on total treated	...	12.1 „ „	



58. *Admissions*.—There were 30 admissions during the year compared with 16 admissions in 1936. Of the 30 admissions 6 were from Sandakan, 5 from Lahad Datu, 4 from Kudat, 3 from Beaufort, 2 each from the Tawau, Papar and Membakut districts and one each from the Tuaran, Penampang, Sipitang, Weston, Tenom and Pensiangan. Eleven of the cases were suffering from Mania, nine from Dementia, five from Dementia Præcox, four from Melancholia and one from Paranoia.

59. *Discharges*.—Seven patients were discharged as cured during the year compared with three patients in 1936.

60. *Deaths*.—Sixteen deaths occurred in the Mental Hospital during the year compared with twenty deaths in 1936. Nephritis caused four deaths, Mania and exhaustion two deaths, Exhaustion two deaths and the following diseases each caused one death, Pneumonia, shock and hæmorrhage, septicæmia, chronic amœbic dysentery, chronic colitis and exhaustion, dementia and exhaustion, ulceration of stomach and exhaustion and heart failure.

61. *Injuries*.—Several cases of minor injury occurred during the year as a result of quarrels among the patients and one patient died from shock and hæmorrhage following rupture of the spleen as the result of a kick from a fellow patient.

62. *Occupation*.—Patients capable of working were employed in metalling the road between the Mental Hospital and the Main Barracks, also in carrying water, cleaning and scavenging, gardening and cooking.

63. *Board of Visitors*.—Twelve meetings were held by the Board of Visitors during the course of the year at the Mental Hospital.

#### X.—LEPER SETTLEMENT.

64. On the 1st January, 1937, 69 patients suffering from Leprosy remained under treatment in the Settlement; during the year there were 9 admissions, compared with 8 in 1936; 4 patients absconded from the Settlement, 5 died and 69 patients remained under treatment on 31st December, 1937.

65. *Admissions*.—Six of the nine admissions were Chinese, two from Sandakan and one from Kudat, Membakut, Mengattal and Papar. The remaining three admissions were Natives of the State, 1 Tidong from Beluran, 1 Murut from Sandakan and 1 Brunei from Langkon.

66. *Discharges*.—No patients were discharged from the Colony during the year.

67. *Abscondings*.—Four patients absconded from the Settlement during the year, three Chinese and one Native of the State.

67a. *Deaths*.—Five deaths occurred in the Settlement during the year, three from leprous cachexia, one from pulmonary tuberculosis and one from proctitis, cystitis and leprosy.

68. Nationality and sex of patients under treatment in the Settlement:—

		Remained 1. 1. 37.	Admitted.	Discharged.	Absconded.	Died.	Remained 31. 12. 37.
Native of the State							
Male	...	18	2	—	1	1	18
Female	...	1	1	—	—	—	2
Chinese							
Male	...	46	3	—	3	4	42
Female	...	2	3	—	—	—	5
Javanese							
Male	...	1	—	—	—	—	1
Female	...	1	—	—	—	—	1
		<hr/> 69	<hr/> 9	<hr/> —	<hr/> 4	<hr/> 5	<hr/> 69

69. Summary of patients under treatment during the past five years.

Year.		Remained 1st January.	Admitted.	Discharged.	Absconded.	Died.	Remained 31st December.
1937	...	69	9	—	4	5	69
1936	...	70	8	1	2	6	69
1935	...	66	16	—	4	8	70
1934	...	64	12	—	5	5	66
1933	...	56	19	3	2	6	64

70. Treatment was administered by intramuscular injection of pure hydnocarpus oil with creasote, 4 c.c. of the latter to 100 c.c. of hydnocarpus oil. The injections were given weekly and the amount injected gradually increased from 2 c.c. to 20 c.c. 51 patients were treated regularly and 1,912 injections were given during the course of the year.



# XI.—VENEREAL CLINIC, SANDAKAN.

71. The Venereal Clinic opened in Sandakan in 1927, continued to do useful work during the year. 92 new cases applied for treatment compared with 63 in 1936, the total number of attendances increased from 271 in 1936 to 352 in 1937. In addition 98 Chinese prostitutes attended the clinic and received 926 treatments.

72. The following cases applied for treatment during the year :—

		New cases.	Repetitions.	Total.
Primary syphilis	...	28	48	76
Secondary syphilis	...	2	4	6
Tertiary syphilis	...	16	52	68
Gonorrhoea	...	31	98	129
Gonorrhoea rheumatism	...	9	42	51
Orchitis	...	2	10	12
Bubo	...	3	2	5
Yaws	...	1	4	5
		<hr/> 92	<hr/> 260	<hr/> 352

73. Nationality and sex of cases treated :—

		New cases.	Repetitions.	Total.
Chinese				
Male	...	82	208	290
Female	...	3	7	10
Native of the State				
Male	...	1	1	2
Female	...	1	—	1
Other races				
Male	...	4	39	43
Female	...	1	5	6
		<hr/> 92	<hr/> 260	<hr/> 352

74.	Number of intravenous injections of Novarsenobillon administered	220
„	„ intra-muscular injections of Gono-Yatren administered	63
„	„ „ „ „ „ Gonococcus vaccine administered	18
„	„ prescriptions dispensed	51

# XII.—VACCINATION AGAINST SMALLPOX.

75. During the year 14,833 vaccinations against Smallpox were performed compared with 12,012 vaccinations during the year 1936. Successful results were recorded in 79.9 per cent. of those examined.

76. Three Government vaccinators were employed during the year, Abdullah in the Jesselton and Tuaran Districts, Mohamed Daud bin Yakop in the Papar, Beaufort and Mempakul districts and Akang bin Sambas in the Kinabatangan district; the latter Vaccinator was replaced by Motusop bin Gunggau in December after previous training in Sandakan Civil Hospital.

Vaccinations recorded in other districts were performed by members of the staff attached Government Civil Hospitals and Dispensaries.

77. The following summary shows the number of vaccinations performed in each district during the year 1937 :—

		Total Vaccinated	Perfect.	RESULT. Modified.	Failed.	Not seen.
EAST COAST RESIDENCY						
District: Tawau	...	354	149	7	32	166
Lahad Datu	...	74	73	—	1	—
Kinabatangan	...	1,080	16	1	31	1,032
Sandakan	...	679	22	2	1	654
Labuk & Sugut	...	139	—	—	—	139
Kudat	...	184	102	8	3	71

		Total	RESULT.			
		Vaccinated	Perfect.	Modified.	Failed.	Not seen.
WEST COAST RESIDENCY						
District: Tuaran	...	530	174	—	67	289
Jesselton	...	4,263	2,021	—	683	1,559
Penampang	...	828	528	—	109	191
Papar	...	2,578	1,260	—	436	882
Beaufort	...	2,392	1,313	3	133	943
Mempakul	...	1,044	651	7	92	294
Tenom	...	245	81	13	28	123
Pensiangan	...	157	15	—	3	139
Keningau	...	103	—	—	—	103
Tambunan	...	183	—	—	—	183
		14,833	6,405	41	1,619	6,768

#### XIII.—PROVISION OF MIDWIVES.

78. At the beginning of the year, six certified midwives were in private practice in Sandakan, including one attached to the staff of Dr. V. A. Stookes' clinic. Two certified midwives were also practising in Jesselton, one of whom received a subsistence allowance from Government.

One certified midwife in Government Service was attached to the staff of the Civil Hospital at Sandakan.

79. *Village Midwives.*—Two completed their training at the end of 1936 and proceeded early in January to Jesselton and Beaufort respectively for work in neighbouring villages. Two additional pupil midwives commenced their training in Sandakan in January and both succeeded in obtaining certificates granted under the Midwives Ordinance in December, both were then transferred to the West Coast for work among native women in the Papar and Membakut districts.

#### XIV.—DISTRIBUTION OF MILK TO SCHOOLCHILDREN.

80. In July sixty boys attending the Sandakan Vernacular School were weighed and their heights and chest measurements taken. From this number thirty boys were selected and given a free ration of seven ounces of milk daily at 12 noon, these boys were all natives of Borneo and of a class who normally take milk or milk products, either very sparingly or not at all in their ordinary diet.

The milk was prepared in accordance with the formulary recommended by the Nestle' and Anglo-Swiss Milk Products Ltd. Four tins of "Ideal" full cream milk (16-oz. tins) and one tin of "Alpine" condensed milk (14-oz. tin) were diluted with water to make up 210 ounces or 30 cupfuls. A small quantity of raspberry essence was added to give the milk a slight taste of raspberries and half an hour before the milk was issued five pounds of ice were added to cool the milk.

The milk was prepared in a large white enamelled iron container and served in 'Milkmaid' cups.

The experiment was continued for one month and at the conclusion, the sixty boys were again weighed.

The average increase in weight during the four weeks in different age group is compared below with the thirty boys in similar groups who did not receive a daily ration of milk.

Age Group.		Average increase	
		of boys fed with milk.	of boys not fed with milk.
Group I	(7 to 8 years)	3.6 lbs.	0.37 lb.
II	(8 to 9 years)	1.2 lbs.	0.83 lb.
III	(9 to 10 years)	2.0 lbs.	0.07 lb.
IV	(10 to 11 years)	1.4 lbs.	0.02 lb.
V	(11 to 12 years)	2.4 lbs.	0.80 lb.
VI	(12 to 13 years)	3.5 lbs.	0.30 lb.
VII	(13 to 14 years)	2.2 lbs.	0.20 lb.

The average weight of the pupils at the beginning of the experiment was 46 lbs. and at the end of the experiment (27 school days) 48.2 lbs., showing an average increase of 2.2 lbs. compared with an average increase of only 0.3 lb. amongst the 30 boys who had received no milk.



## XV.—ANTI-MALARIAL WORK.

81. The anti-malarial measures initiated in Sandakan in 1929 were continued during the year under review. The area under control consists of streams and water courses in seven ravines in the Sanitary Board area and earth drains, seepage areas and other potential breeding places in the North Road, Ernestina Road, Beatrice Road, Hospital Road, Darby Road, Humphreys Street, Guillemard Road, Church Road, Labuk Road, Jalan Anam, and Leila Road, the grounds of the Wireless Station, Main Barracks, Prison and the vicinity of the Mental Hospital.

82. Three labourers were employed, but this number was reduced to two during the second half of the year. Oil spraying was carried out by means of a pneumatic knapsack sprayer and 2,240 gallons of anti-malarial mixture were used.

## JESSELTON.

83. The area under control consists of streams, ditches, potential breeding places in road side drains, seepages and swamps in the vicinity of Victoria Barracks, Victoria Valley, North side of Civil Hospital, Railway Clerk's Quarters, Railway Hotel, Jesselton Ice & Power Station, Atkinson Road and South Road.

84. *Labour.*—Two labourers were employed on this work under the supervision of a trained Field Assistant, in August the latter was replaced by an overseer. Oiling was carried out by means of the brushing method. 842 gallons of oil were used during the year.

85. Anti-malarial work in the vicinity of the Government Stations at Tenom and Keningau was also continued during the year by means of Prison labour, 145 gallons of oil were used at the two stations.

## TAWAU.

86. In July, after a survey, anti-mosquito measures were instituted at Tawau, and an area of swampy land at the back of the township in which the larvæ of *A. ludlowi*, *A. umbrosus*, and *A. barbirostris*, were found, was placed under control — Oiling was carried out weekly with a pneumatic knapsack sprayer.

In December owing to the presence of *A. kochi*, a number of earth drains in the vicinity of the Residency together with the roadside drains in Durahman Road were added to the area under control.

One labourer working under the supervision of the senior dresser at the Civil Hospital carried out this work and 184 gallons of oil were used.

## XVI.—X-RAY INSTALLATIONS.

87. The new X-Ray unit installed in the Civil Hospital, Sandakan, giving a rated output of 50 mA at 90 kV continued to give good service during the year. 60 screen examinations were carried out and 68 radiographs were made.

88. The generating engine of the installation at Beaufort Civil Hospital gave a good deal of trouble during the year and in consequence little use was made of this unit.

89. The installation at the Civil Hospital, Jesselton, is to be replaced in 1938 by a unit similar to the one installed at Sandakan in 1935.

## XVII.—PORT HEALTH WORK AND QUARANTINE.

90. Sandakan is the principal port of the State, other ports are Jesselton, Kudat, Lahad Datu, Semporna and Tawau. A Quarantine Station is maintained on the island of Berhala, about three miles from Sandakan.

91. At Sandakan, 41 vessels from Hong Kong, 1 from Tokio, 1 from Keelung, 1 from Sulu, 1 from Durban and 1 from Singapore, a total of 46 vessels were boarded on arrival by the Port Health Officer; 10,982 passengers and 3,936 crew or 14,918 persons in all were examined.



92. At Jesselton, during the year, no vessels were examined by the Port Health Officer.

93. At Tawau, 2 vessels from Keelung were boarded by the Port Health Officer, 120 crew and 464 passengers were examined, a total of 584 persons.

#### SUSPECTED SHIPS.

94. On the 20th August the port of Hong Kong was declared to be infected with cholera and from that date to 18th November, when the Notification declaring the port of Hong Kong to be infected with cholera was cancelled 2,433 deck passengers were transferred from eleven vessels to the Quarantine Station at Sandakan for observation; 284 cabin passengers were permitted to land under surveillance. No cases of cholera occurred among the passengers.

#### INFECTED SHIPS.

95. No infected vessels were reported in the State during the year.

#### DESTRUCTION OF RATS IN THE PORT OF SANDAKAN.

96. 1,576 rats were caught and destroyed in the port of Sandakan during the year, 612 rats were examined but none found infected with plague.

#### DERATIZATION OF SHIPS.

97. One vessel was fumigated during the year by burning sulphur in open pans, 64 rats were destroyed by the fumigation.

#### LEAGUE OF NATIONS HEALTH ORGANISATION, EASTERN BUREAU.

98. The weekly bulletin of epidemiological information, issued by the Eastern Bureau in Singapore, and broadcast from Malabar (Java) every Saturday morning was received regularly throughout the year. A summary of the bulletin was broadcast in clear each Sunday morning from the Sandakan Wireless Station at 0100 hour G.M.T.

### XVIII.—DANGEROUS INFECTIOUS DISEASE.

99. No cases of Cholera, plague, smallpox or cerebro-spinal meningitis were reported in the State during the year.

### XIX.—ESTATES AND COMMERCIAL COMPANIES.

100. The health of the labour force employed on the various Rubber and Tobacco Estates and Logging Camps was good throughout the year. The labour force employed increased from 13,307 on 1st January to 18,480 on 31st December. The average sick rate for the year for in-patients was 1.4 per cent. compared with 1.6 per cent. in 1936. The death rate per mille was 18.0 compared with 11.1 per mille the previous year.

101. The following table shows the average estate labour force, the number of deaths and the death rate during the past five years:—

Year.	Average labour force.	No. of deaths.	Death rate per mille.
1937	17,199	309	18.0
1936	11,142	124	11.1
1935	11,083	162	14.7
1934	10,430	150	14.4
1933	8,535	123	14.4

#### PREVAILING DISEASES AMONG ESTATE LABOURERS.

102. *Malaria*.—3,631 cases of malaria were admitted to hospital during the year compared with 1,734 in 1936 and 2,097 in 1935. The morbidity rate was 21.1 per cent. compared with 15.6 per cent. in 1936. There were 103 deaths from this disease during the year compared with 31 deaths the previous year, and 74 of these deaths occurred on Tawau Rubber Estate.

103. *Beri-beri*.—224 cases of beri-beri were admitted to hospital during the year with 7 deaths compared with 161 cases and 5 deaths in 1936. The morbidity rate was 1.3 per cent. compared with 1.4 per cent. in 1936.

104. *Pneumonia*.—262 cases of pneumonia were admitted to hospital during the year with 72 deaths, compared with 120 cases and 32 deaths in 1936. The morbidity rate was 1.5 per cent. compared with 1.1 per cent. in 1936.

105. *Dysentery*.—216 cases of dysentery were admitted to hospital during the year with 20 deaths, compared with 102 cases and 5 deaths during 1935. The morbidity rate was 1.3 per cent. compared with 0.9 per cent. in 1936.



106. *Ankylostomiasis*.—The mass treatment of labourers for this disease was carried out twice during the year on many of the estates and 6,621 labourers were treated.

#### XX.—INVESTIGATION INTO NATIVE HEALTH.

107. Dr. J. O. Shircore, c.m.g., late Director of Medical and Sanitary Services, Tanganyika, concluded his investigation into the health of the native at the end of 1936, this investigation had special reference to the sociological and economic factors bearing on the depopulation problem of the West Coast and Interior. Dr. Shircore's report was submitted to Government on the 29th December, 1936, and published in July, 1937.

#### XXI.—REVENUE.

108. The total revenue of the Medical Department for the year 1937 amounted to \$18,960.45 compared with \$13,988.90 in 1936, an increase of \$4971.55.

#### EXPENDITURE.

109. The total expenditure of the Medical Department for the year 1937 amounted to \$197,917.54 compared with \$161,486.77 in 1936, an increase of \$36,430.77.

#### XXII.—HOSPITAL DRESSERS.

110. Two examinations for Hospital Dressers for promotion in Grade were held during the year in Sandakan and Jesselton on 1st and 2nd June, and 1st and 2nd December.

111. Five Dressers employed by Government and three Dressers in private employ entered for the examination in June, of these, four qualified for promotion to Grade I and three to Grade III.

112. Two Dressers employed by Government and four Dressers in private employ entered for the examination in December, of these, one qualified for promotion to Grade I and two to Grade III.

#### XXIII.—STAFF.

113. Dr. P. A. Dingle, Principal Medical Officer, proceeded on leave on 23rd August, 1937.

114. Dr. J. P. Taylor was District Surgeon, Sandakan, until 24th August, 1937, when he was appointed to act as Principal Medical Officer.

115. Dr. J. K. O'Byrne carried out the duties of District Surgeon, Jesselton, throughout the year.

116. Dr. J. C. T. Tregarthen carried out the duties of District Surgeon, Interior, until the 25th August, 1937, when he was appointed District Surgeon, Beaufort, in addition to his other duties.

117. Dr. G. Stonehill carried out the duties of District Surgeon, Kudat, throughout the year.

118. Dr. H. Wands carried out the duties of District Surgeon, Beaufort, until 28th August, 1937, when he was transferred to Sandakan on appointment as District Surgeon, Sandakan.

119. Miss E. Ashworth carried out the duties of Nurse-matron, Civil Hospital, Sandakan, throughout the year.

120. Miss A. M. Davies carried out the duties of Nurse-matron, Civil Hospital, Jesselton, until 21st April, 1937, when she retires from the Service.

121. Miss Hilda Eleanor Bates, reported her arrival on 15th April, 1937, and was appointed Nursing-sister, Civil Hospital, Jesselton, on 15th April, 1937.

PERCIVAL A. DINGLE.  
Principal Medical Officer,  
North Borneo.







